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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/815,258   | 03/31/2004  | Dennis Michael Gray  | 132407-3            | 7463             |
| 23413  | 7590        | 09/02/2005           | EXAMINER            |                  |
| CANTOR COLBURN, LLP<br>55 GRIFFIN ROAD SOUTH<br>BLOOMFIELD, CT 06002 |             |                      | KOEHLER, ROBERT R   |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1775                |                  |

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/815,258

Applicant(s)

GRAY ET AL.

Examiner

Robert R. Koehler

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-34 and 45-52 is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-20, 23-25, 35-39, 41-44 and 53 is/are rejected.
- 7) ☒ Claim(s) 10-12, 21, 22 and 40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07062004; 07272005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

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**DETAILED ACTION*****Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 46 mentions the subject matter of "the aqueous plating bath comprises a nickel salt, a cobalt salt, an iron salt, or combinations comprising at least one of the foregoing salts" which cannot be found in the specification. See paragraphs [0019] to [0022] on pages 6 and 7.

***Claim Objections***

1. Claim 13 is objected to because of the following informalities: Claim 13 does not show the correct chemical symbol for "CBN." The letters "cBN" should be changed to "CBN." See line 3 of the claim. Appropriate correction is required.

2. Claim 23 is objected to because of the following informalities: Claim 23 contains an incomplete phrase that defines the "hard particles" of a protective coating. Note the wording "wherein the hard particles of" in lines 1 and 2 of the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Evaluations of the level of ordinary skill in the art requires consideration of such factors as various prior art approaches, types of problems encountered in the art, rapidity with which innovations are made, sophistication of technology involved, educational background of those actively working in the field, commercial success, and failure of others.

The "person having ordinary skill" in this art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The evidence of record including the references and/or admissions are considered to reasonably reflect this level of skill.

Claims 1 to 9, 13 to 20, 23 to 25, 35 to 39, 41 to 44, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,061,525 (Grazen) in view of U.S. Patent No. 4,305,792 (Kedward, et al.) and U.S. Patent Application Publication No. 2003/0183529 A1 (Ohara, et al.).

Grazen teaches an electrodeposition process for the production of wear resistant materials such as turbine components. The process involves the simultaneous electrodeposition of a metal (for example, nickel, iron, cobalt, nickel-cobalt alloys) and settling of electrically inert additive (hard) particles under controlled conditions to produce a composite structure in which the additive particles retain their discrete identity and are more or less homogeneously dispersed within the electroplated metal deposit. Any additive particle can be used in the process taught by Grazen provided that the particles are substantially insoluble in the plating bath. For example, diamond particles can be used in the composite coating. Grazen states that the plating bath, including the additive particles, are recirculated for maintaining a uniform and controlled dispersion of particles in the plating bath. A wide variety of additive particle sizes can

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be used, and the plating bath can contain conventional electroplating additives. Grazen also states that the article to be plated should be moved in the plating slurry by various means such as rotation of the article. See line 20 in column 1 to line 27 in column 2 and line 65 in column 2 to line 61 in column 5. Grazen differs from the claims in that Grazen does not mention the usage of an electroless process for obtaining a plated composite coating and Grazen does not mention the usage of metal-coated additive (hard) particles in the composite coating.

However, Kedward, et al. teaches the suitability of using an electroless method for plating a composite coating on a substrate. See lines 13 to 32 in column 1. Also, Ohara, et al. teaches the usage of metal-coated hard particles in a plated composite coating. See Figure 1, paragraphs [0014] and [0021] to [0034].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the teaching by Grazen concerning **(a)** the electrochemical method for producing a plated composite coating on a substrate and **(b)** the usage of additive (hard) particles in a composite coating as suggested by the electroless plating method of Kedward, et al. and the metal-coated hard particles of Ohara, et al. because the teachings of Kedward, et al. and Ohara, et al. also lead to the production of a plated composite coating on a substrate. A person skilled in the art of composite metallurgical coatings would have been motivated to rely on the Kedward, et al. and Ohara, et al. patents because both references utilize an appropriate method (an electroless plating method) and/or suitable additive particles (metal-coated additive particles) which still produce a plated composite coating on a substrate.

#### ***Allowable Subject Matter***

Claims 10 to 12, 21, 22, and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 26 to 34 and 45 to 52 are allowed.

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The following is a statement of reasons for the indication of allowable subject matter:

The Examiner believes that the prior art does not teach, suggest, or disclose applicants' claimed erosion resistant coating having an additive dispersed in the coating, a non-metallic film formed on the hard particles, or the usage of nanoparticles dispersed in the composite coating. Also, the Examiner believes that the prior art does not teach, suggest, or disclose applicants' claimed electroless plating method for forming a hard particle coating that includes the process steps of **(a)** submerging and rotating a hydroelectric turbine component in a plating slurry to plate the component with a coating of hard particles in a metal matrix and **(b)** heat treating the coated component in a furnace to a temperature of about 300°C to about 500°C to produce a coating with a Mohs hardness greater than 7.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Robert Koehler whose telephone number is **(571) 272-1536**. The Examiner can normally be reached on Tuesday to Friday from 9:30 AM to 7:00 PM. The Examiner can also be reached on alternate Mondays.

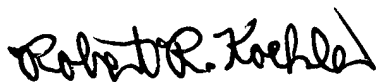
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Deborah Jones, can be reached on **(571) 272-1535**. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

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A handwritten signature in black ink, reading "Robert R. Koehler". The signature is written in a cursive style with a large, stylized 'R' at the beginning.

**ROBERT R. KOEHLER**  
**PRIMARY EXAMINER**

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**August 30, 2005**